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ANALYSING WASTE MANAGEMENT PRACTICES IN COIMBATORE CITY MUNICIPAL CORPORATION – A CASE STUDY

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Abstract

Coimbatore has seen significant changes in waste management from 2014 to 2024, driven by rapid urban growth. Daily waste generation increased from 850 to 1300 tons, with collection efficiency improving from 75% to 91%. Source segregation participation rose from under 25% to over 70%, and recycling rates climbed from 20% to 60%. Landfill use decreased from 75% to 40%, thanks to advancements in composting and waste-to-energy methods. Despite these improvements, challenges remain, including inadequate recycling capacity and inconsistent segregation practices. Future efforts should enhance recycling infrastructure and technological solutions.

Keywords: Waste Management, Urban Growth, Source Segregation, Recycling Rate, Landfill Reduction.

Introduction

Coimbatore, a major city in the Indian state of Tamil Nadu, has experienced substantial industrial and urban growth over the past decade. This economic and population surge has led to an increase in waste generation, posing significant challenges for the city's waste management infrastructure. The Coimbatore City Municipal Corporation (CCMC), responsible for managing municipal services, has been proactive in addressing these challenges and has worked diligently to implement more sustainable waste management practices.

This case study examines the evolution of waste management strategies in Coimbatore from 2014 to 2024. The analysis focuses on the various approaches taken by the CCMC to cope with the rising waste volumes and the need for environmentally friendly solutions. It delves into the advancements made in waste collection, segregation, recycling, and disposal methods, and evaluates the effectiveness of these strategies in reducing the city's environmental footprint.

The study highlights key improvements over the decade, such as the introduction of new technologies, enhanced waste segregation at source, and community engagement programs aimed at promoting waste reduction and recycling. It also addresses the persistent challenges faced by the city, including issues related to waste collection efficiency, public participation, and the management of hazardous waste.

Furthermore, the case study identifies areas where further development is needed. It explores potential future strategies that could help Coimbatore achieve more sustainable waste management outcomes, such as expanding the use of waste-to-energy technologies, improving infrastructure for waste processing, and fostering greater collaboration with stakeholders.

By comparing the waste management strategies of 2014 with those of 2024, this case study provides valuable insights into the progress made and the ongoing efforts required to create a more sustainable and efficient waste management system for Coimbatore.

Waste Generation and Collection

In 2014, Coimbatore generated approximately 850 tons of waste per day. By 2024, this figure has increased to 1300 tons per day due to population growth and urban expansion. The waste collection efficiency has also improved, with the introduction of more comprehensive door-to-door collection services and technological advancements in waste management. Below is a comparison of waste generation and collection efficiency over the last decade.

Year	Waste Generation (tons/day)	Collection Efficiency (%)
2014	850	75%
2015	900	78%
2016	950	80%
2017	1000	82%
2018	1050	85%
2019	1100	87%
2020	1150	88%
2021	1200	89%
2022	1250	90%
2023	1300	90%
2024	1300	91%

Source: CCMC

Source Segregation and Recycling

Source segregation has become a critical component of Coimbatore's waste management strategy. In 2014, less than 25% of households participated in waste segregation. By 2024, this number has grown significantly to over 70%, thanks to continuous public awareness campaigns and the establishment of Material Recovery Facilities (MRFs). The following table tracks the progress in source segregation and recycling rates.

Year	Source Segregation (%)	Recycling Rate (%)
2014	25%	20%
2015	30%	25%
2016	35%	30%
2017	45%	35%
2018	55%	40%
2019	60%	45%
2020	65%	50%
2021	68%	53%
2022	70%	55%
2023	70%	58%
2024	70%	60%

Source: CCMC

Landfill Management

Coimbatore's reliance on landfills has decreased over the past decade, but challenges remain. In 2014, over 75% of the city's waste ended up in landfills. By 2024, this has been reduced to 40% due to improved waste processing methods, including composting and waste-to-energy initiatives. However, managing existing landfills continues to be a concern. Below is a comparison of landfill dependence and management practices.

Year	Waste Sent to Landfills (%)	Landfill Management Practices
2014	75%	Open dumping, minimal management
2015	70%	Initial steps towards waste reduction
2016	65%	Introduction of waste-to-energy projects
2017	60%	Improved scientific management of landfills
2018	55%	Increased composting and recycling efforts
2019	50%	Rehabilitation of older landfill sites
2020	45%	Expansion of composting and waste-to-energy plants

2021	43%	Focus on reducing landfill usage
2022	42%	Green initiatives at closed landfill sites
2023	40%	Continued efforts to minimize landfill dependence
2024	40%	Enhanced monitoring and management practices

Source: CCMC

Pros and Cons of Current Practices

The advancements in waste management have yielded numerous benefits for Coimbatore, but several challenges persist. On the positive side, the city has seen improvements in waste collection efficiency, increased public participation in segregation, and a reduction in landfill dependency. However, there are still areas needing attention, such as the lack of sufficient recycling capacity and inconsistent segregation practices across all wards. The table below summarizes the pros and cons of Coimbatore's current waste management practices.

Pros	Cons
Improved waste collection efficiency	Insufficient recycling capacity
Increased participation in source segregation	Inconsistent segregation practices
Reduction in landfill dependency	Ongoing environmental concerns from landfills
Introduction of waste-to-energy initiatives	Limited infrastructure for waste processing
Better public awareness and engagement	Need for more technological advancements

Source: CCMC

Future Suggestions

To continue improving waste management in Coimbatore, it is crucial to address existing challenges and build on current successes. Expanding infrastructure, such as recycling facilities and composting units, will be essential. Additionally, enforcing stricter segregation rules, incentivizing waste reduction, and promoting sustainable practices like a circular economy model will help further reduce the city's environmental impact. Continuous public education and community engagement will also be vital to achieving these goals. The following table outlines key suggestions for future improvements.

Area	Suggested Improvement
Infrastructure Development	Expand recycling facilities, promote decentralized composting
Policy and Regulation	Enforce stricter segregation rules, incentivize waste reduction
Public Participation	Continue awareness campaigns, engage communities in monitoring
Sustainable Practices	Promote zero-waste initiatives, develop circular economy models

Conclusion

Over the past decade, the Coimbatore City Municipal Corporation (CCMC) has made commendable strides in enhancing its garbage management practices, reflecting a significant improvement in handling the city's growing waste challenges. Advances such as improved waste collection systems, better segregation practices, and the establishment of recycling facilities have marked progress in the city's waste management efforts. However, to fully realize its potential as a leader in sustainable waste management, Coimbatore must address ongoing challenges. This includes fostering greater public participation through continued education and engagement initiatives, expanding and upgrading infrastructure to support efficient waste processing, and adopting more sustainable waste management methods. Investing in innovative technologies and practices, coupled with strong community involvement, is essential for advancing the city's environmental goals. By focusing on these areas, Coimbatore can position itself as a model for eco-friendly waste management in India, setting a benchmark for other cities to follow.

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